



Front cover image:

Fragment of a plasma membrane with the human  $\beta_2$ -adrenergic G protein-coupled receptor (blue) embedded in the lipid bilayer (white/red sticks). The receptor is bound to a diffusible ligand (green/red/blue balls), with cholesterol (orange/red balls) mediating interactions between the two receptor molecules. The membrane is decorated with carbohydrates (yellow sticks) on the extracellular side and a cytoskeleton (dark blue) attached at the cytoplasmic side. Several soluble proteins and cellular organelles are free floating in the cytoplasm. This image was kindly provided by Yekaterina Kadyshkevskaya and the Stevens lab at The Scripps Research Institute.

**Publication information:** *Biochimica et Biophysica Acta (Biomembranes)* (ISSN 0005-2736). For 2009, Volume 1788 (12 issues) is scheduled for publication. Subscription prices are available upon request from the Publisher, from the Regional Sales Office nearest you, or from this journal's website (<http://www.elsevier.com/locate/bbamem>). Further information is available on this journal and other Elsevier products through Elsevier's website (<http://www.elsevier.com>). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

**USA mailing notice:** *Biochimica et Biophysica Acta (Biomembranes)* (ISSN 0005-2736) is published monthly by Elsevier B.V. (ISSN 0005-2736), 1043 NX Amsterdam, The Netherlands. Periodicals postage paid at Rahway, NJ 07065-9998, USA, and at additional mailing offices. **USA POSTMASTER:** Send change of address to *Biochimica et Biophysica Acta (Biomembranes)*, Elsevier, Customer Service Department, 11830 Westline Industrial Drive, St. Louis, MO 63146-3313, USA. **AIRFREIGHT AND MAILING** in the USA by Mercury International Limited, 365 Blair Road, Avenel, NJ 07001-2231, USA. **Orders, claims, and journal inquiries:** Please contact the Regional Sales Office nearest you. **St. Louis:** Elsevier, Customer Service Department, 11830 Westline Industrial Drive, St. Louis, MO 63146-3313, USA; phone: (877) 839 7126 [toll free within the USA]; (+1) (314) 453 7076 [outside the USA]; fax: (+1) (314) 523 5153; e-mail: [JournalCustomerService-usa@elsevier.com](mailto:JournalCustomerService-usa@elsevier.com).

**Amsterdam:** Elsevier, Customer Service Department, PO Box 211, 1000 AE Amsterdam, The Netherlands; phone: (+31) (20) 4853757; fax: (+31) (20) 4853432; e-mail: [JournalsCustomerServiceEMEA@elsevier.com](mailto:JournalsCustomerServiceEMEA@elsevier.com). **Tokyo:** Elsevier, Customer Service Department, 4F Higashi-Azabu, 1-Chome Bldg., 1-9-15 Higashi-Azabu, Minato-ku, Tokyo 106-0044, Japan; phone: (+81) (3) 5561 5037; fax: (+81) (3) 5561 5047; e-mail: [JournalsCustomerServiceJapan@elsevier.com](mailto:JournalsCustomerServiceJapan@elsevier.com).

**Singapore:** Elsevier, Customer Service Department, 3 Killiney Road, #08-01 Winsland House I, Singapore 239519; phone: (+65) 63490222; fax: (+65) 67331510; e-mail: [JournalsCustomerServiceAPAC@elsevier.com](mailto:JournalsCustomerServiceAPAC@elsevier.com). **Author inquiries:** For inquiries relating to the submission of articles (including electronic submission where available), please visit this journal's homepage at <http://www.elsevier.com/locate/bbamem>. You can track accepted articles at <http://www.elsevier.com/trackarticle> and set up e-mail alerts to inform you of when an article's status has changed. Also accessible from here is information on copyright, frequently asked questions, and more. For detailed instructions on the preparation of electronic artwork, please visit <http://www.elsevier.com/artworkinstructions>. Contact details for questions arising after acceptance of an article, especially those relating to proofs, will be provided by the publisher.

**Advertising information:** Advertising orders and inquiries may be sent to James Kenney, Elsevier Ltd., 32 Jamestown Road, London NW1 7BY, UK; phone: (+44) 207 424 4216; fax: (+44) 1865 853 136; e-mail: [jkenney@elsevier.com](mailto:jkenney@elsevier.com). Customers in the USA and Canada may also contact Tino DeCarlo, Advertising Department, Elsevier Inc., 360 Park Avenue South, New York, NY 10010-1710, USA; phone: (+1) (212) 633 3815; fax: (+1) (212) 633 3820; e-mail: [t.decarlo@elsevier.com](mailto:t.decarlo@elsevier.com).

Printed by Polestar Wheatons Ltd., Exeter, United Kingdom

© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper)

# BIOMEMBRANES

**Executive Editors:** R.M. Epand (*Hamilton, ON, Canada*)  
J.M. Ruysschaert (*Brussels, Belgium*)

## Section Editors:

A. Alonso (*Lejona, Spain*)  
T. Anchordoquy (*Denver, CO, USA*)  
F.J. Barrantes (*Bahia Blanca, Argentina*)  
K. Boesze-Battaglia (*Philadelphia, PA, USA*)  
R. Brasseur (*Gembloux, Belgium*)  
G. Cevc (*Munich, Germany*)  
A. Chattopadhyay (*Hyderabad, India*)  
M. Colombini (*College Park, MD, USA*)  
J.H. Crowe (*Davis, CA, USA*)  
K. Gawrisch (*Rockville, MD, USA*)  
A. Gräslund (*Stockholm, Sweden*)  
T.H. Haines (*New York, NY, USA*)  
J.A. Killian (*Utrecht, The Netherlands*)  
R.K.H. Kinne (*Dortmund, Germany*)  
K. Matsuzaki (*Kyoto, Japan*)

J. Perez-Gil (*Madrid, Spain*)  
J. Peter Slotte (*Turku, Finland*)  
J.J.H.M. de Pont (*Nijmegen, The Netherlands*)  
M. Prieto (*Lisbon, Portugal*)  
G.T. Robillard (*Groningen, The Netherlands*)  
A. Seelig (*Basel, Switzerland*)  
B.S. Selinsky (*Villanova, PA, USA*)  
F. Separovic (*Melbourne, VIC, Australia*)  
Y. Shai (*Rehovot, Israel*)  
W.D. Stein (*Jerusalem, Israel*)  
S.-F. Sui (*Beijing, China*)  
L.K. Tamm (*Charlottesville, VA, USA*)  
D.P. Tieleman (*Calgary, AB, Canada*)  
H.J. Vogel (*Calgary, AB, Canada*)  
C.M. Yip (*Toronto, ON, Canada*)

**Scientific Editors** (*Elsevier, Burlington, MA, USA*):

Sharmistha Ghosh-Janjigian  
Amy Volpert  
Laura Wallins  
Denise M. Wells (Manager)



**ELSEVIER**

Amsterdam – Boston – Jena – London – New York – Oxford – Paris –  
Philadelphia – San Diego – St. Louis